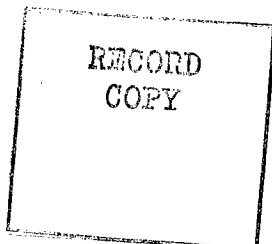


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JPRS: 3568

18 July 1960

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A STUDY OF ISRAELI WATER RESOURCES AND WATER-DEVELOPMENT PROJECTS

by Ariel Regev

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JPRS: 3568

CSO: 4039-D

## A STUDY OF ISRAELI WATER RESOURCES AND WATER-DEVELOPMENT PROJECTS

[The following is a translation of an article by Ariel Regev in the Hebrew-language periodical Etger (Challenge), Tel Aviv, Vol 1, No 1, April 1960, page 25.]

### Israel Has a Lot of Land without Irrigation

Of the 20.7 million dunams [4,554,000 acres] which make up the total area of the state of Israel, only about 4.3 million dunams [946,000 acres]<sup>1</sup> are suitable for agricultural cultivation without artificial irrigation. Most of this entire area is suitable for irrigation. An additional 4.3 million dunams [946,000 acres] are available for other agricultural uses, such as natural pasture or afforestations; its economic value is about 10 times smaller than that of cultivation for dryland farming. From these 4.3 million dunams, 1.4 million dunams [308,000 acres] are suitable for irrigation, including about a million dunams [22,000 acres] in the northern part of the Negev. The remaining 2.9 million dunams [638,000 acres] are not suitable for irrigation because of the soil structure. The following table gives a breakdown of the state's land potential:

Table I

Dryland	4,300,000 dunams [946,000 acres]
Land not suitable for unirrigated cultivation but fit for irrigation -- 1.4 million dunams, agricultural value without irrigation, in terms of dry land	140,000 dunams [30,800 acres]
Land not suitable for unirrigated cultivation or irrigation -- 2.9 million dunams; agricultural value, in terms of unirrigated land	290,000 dunams [63,800 acres]
Total	4,730,000 dunams [1,040,600 acres]

1. Yehudah Lewah, Kalkalat Hamesheq Hahaqlai (Economy of Agricultural Farming), 'Am 'Oved Publishing House, 1957, pp 20-21; Shenaton Statisti, (Statistical Yearbook), 1958/1959, p 130; Z Tsur, "Agricultural Weight in the National Economy," Riv'on Lekalkalah (Economic Quarterly), November 1957, p 113.

### Stretches of Dunams -- Israel Has a Lot of Irrigated Land

Despite the limited quantities of water available to the state of Israel, artificial irrigation led to a two- or three-fold increase in land potential.

Complete artificial irrigation, at a rate of 670 cubic meters of water per dunam [.22 acres] per year would increase the agricultural value of the land five-fold. The figures are the national average.

Every 100 million cubic meters of irrigation water per year will supply irrigation to 150,000 dunams of land [33,000 acres]. Use of these quantities in northern and central Israel would transform 150,000 dunams of unirrigated land into irrigated land with an economic value equivalent to that of 750,000 dunams [165,000 acres] of unirrigated land. In other words, the land potential of the state would be increased by 600,000 dunams [132,000 acres], in terms of unirrigated land. The same amount of irrigation water used in the Negev would transform 150,000 dunams of land unsuitable for dryland farming, with an agricultural value in terms of unirrigated land at 15,000 dunams, into irrigated land with an economic value of 750,000 dunams of unirrigated land; the gain then would be 735,000 dunams [161,700 acres]<sup>2</sup>. This amount of irrigation in the Negev, then, would be about 20 percent more profitable than irrigation in the northern and central parts, in terms of land potential. Also to be considered in the amount of profit are the costs of supplying water to the Negev; this brings up the problem of the possibilities for agricultural production in the Negev under acceptable economic requirements.

The water potential of the state of Israel is now estimated to be 1.7 billion cubic meters annually. This includes 300 million cubic meters for non-agricultural requirements and 100 million cubic meters of water with high saline content, suitable only for use in fish ponds. The remaining 1.3 billion cubic meters of water per year are for irrigation, at a rate of 670 cubic meters per dunam, of 2 million dunams [440,000 acres] of land, thereby increasing the land potential of Israel (in terms of unirrigated land) by 8 million dunams if the water is used only in the northern and central regions of Israel. In this case the land potential would be distributed as follows:

Table 2

Two million dunams of irrigated land, with agricultural value in terms of unirrigated land	10,000,000 dunams [2,200,000 acres]
Unirrigated Land	2,300,000 dunams [506,000 acres]
Total of the two last section of Table 1	430,000 dunams [94,600 acres]
Total	12,730,000 dunams [2,800,600 acres]

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2. A. Amir, "Land and Water," Riv'on Lekalkalah, October 1955, p 121

The land potential will be increased by an additional million dunams if the one million dunams are irrigated in the Negev, and on that basis, the irrigated area in the north will be reduced from 2 million dunams to one million dunams. The total land potential will then be 13.63 million dunams [2.998 million acres] (in terms of unirrigated land).

Today the cultivated area totals 4 million dunams [880,000 acres], of which 1.25 million dunams [275,000 acres] are irrigated and several hundred thousand dunams are used for other agricultural exploitation. The exploited water sources are about 1.3 billion cubic meters per year, of which only one billion are for agricultural purposes.<sup>3</sup> The current exploitation of the land potential is as follows:

Table 3

1.25 million of dunams of irrigation land with an agricultural value in terms of unirrigated land	6,250,000 dunams [1,375,000 acres]
Unirrigated land	2,750,000 dunams [605,000 acres]
An estimated 500,000 dunams for other agricultural uses with an agricultural value in terms of unirrigated land	50,000 dunams [11,000 acres]
Total	9,050,000 dunams [1,991,000 acres]

Therefore, after full exploitation of the land potential, 3,680,000 dunams [809,600 acres] will remain unexploited or 4,680,000 dunams [1,029,600 acres] through the irrigation of one million dunams [220,000 acres] in the Negev.

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3. A. Amir, "Agricultural Development During 1957/1958", Riv'on Lekalkalah, Dec 1958, page 135; Shenaton Statisti 1958/1959, p 131, p 162; Bank Yisrael Din-Waheshvon 1958, (Report of Bank of Israel) p 101.

### The Dried-up State

Only a few years ago, the leadership of the state of Israel thought that its agricultural possibility was twice what it is today. "Our calculation was based on the assumption that the quantities of water put at our disposal would be sufficient for the irrigation of an area which is larger than the agricultural area of the country."<sup>4</sup> Since then the area for cultivation through irrigation has reached a figure of 5.7 million dunams, [1,254,000 acres] the agricultural value of which (in terms of unirrigated land) is estimated at 27,500,000 dunams [6,050,000 acres]. Together with the area available for other agricultural uses the land potential in the state will be 27,790,000 dunams [6,113,800 acres]. This area would make it possible in accordance with the plan calling for 120 dunams [26.4 acres] per agricultural unit, to establish 230,000 units.

The reduction of the planned irrigation area from 5.7 million dunams [1,254,000 acres] to 2 million dunams [440,000 acres], was mainly caused by the reduction of the quantity of water expected to be available to the state, by almost half. A second reason was the fact that for the required complete irrigation of one dunam [.22 acres], more water is needed than was assumed at the time of the agricultural planning. Let us first consider the second reason.

The agricultural planners assumed at the time an average need of 500 cubic meters of water per year the irrigation of one dunam. The agricultural planning institutions continued to maintain that it would be possible to reduce the present quota of 670 cubic meters per year to 600 and possibly even to between 500 and 600 cubic meters per dunam per year;<sup>5</sup> and they are trying to convince the farmers to stop wasting water. But the farmers certainly should know what they are doing; they are not making use of surplus water which would increase the cost of production even in localities where water is relatively cheap. Yehudah Lewah even established that the average quota should be 800 cubic meters of water per year if complete irrigation is needed. The figure of 670 cubic meters per dunam per year reflects a very optimistic approach.

<sup>4</sup> A. Amir "Land and Water" in Riv'on Kalakalah, Oct 55, p 117

<sup>5</sup> A. Amir, "Land and Water", Riv'on Kalakalah, Oct 55, p 121  
Z. Tsur, "Land and Water", Riv'on Kalakalah, Nov 1957, p 113

## "The Security Secret" - How Much Water We Have

How much water is available in the state of Israel? It seems that the state depends very much on artificial irrigation. The reliable estimate of the water potential was widely publicized and the figures were revised whenever there was a change in the estimate. However, until now, many who knew how to write did not publicize the water potential of the country in the Hebrew language, for many years. Something, however, was published in the foreign press and great concern was shown about keeping these publications from reaching the civilian masses.

This subject was discussed in an article which appeared in Haaretz about 5 years ago.<sup>6</sup> The author of the article prepared a table on the estimated water potential, indicating that in the course of 10 years the potential would dry out and would decrease from an approximate 3.5 billion cubic meters per year in 1944 to 1.8 billion cubic meters of water in 1955. The author of the article based his information for the 1952 estimate on material which had already been printed, but more recent estimates on available water quantities use only information which was not widely publicized. A most authentic study of the water resources was a report by "Tahal" [Israel National Water Planning Authority] published in April 1955, in which the author said in the introduction that the report was not to be publicized.

The most up-to-date estimate, according to this writer, also appeared in Haaretz of 11 July 1958, in an article by the paper's correspondent on development matters. The estimate, which, of course, includes the secret report of Tahal, gives a figure of 715 million cubic meters of water in the section called "Yarden-Yarqon" (Jordan-Yarkon). Since many publications reported the Yarkon output estimate at that time to be 220 million cubic meters of water, that leaves a figure of 495 million cubic meters for the Jordan River. In the section "Underground Water" a figure of 735 million cubic meters was listed. However, the writer of this article decided to place the figure for underground water at 500 million cubic meters, on the basis of more recent research. The following table is a breakdown of Israel's water potential, based on estimates which were published about a year and a half ago (in million cubic meters):

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<sup>6</sup> Barukh Ber, "Water Potential and Development of Irrigation," Haaretz, 8 June 1955

Table 4

Jordan	495
Yarkon	220
Springs	280
Streams	100
Sewage and return flow	145
Ground water	500
Total	1,740

Israel's share of the Jordan and Yarmuk is 495 million cubic meters of water from the Jordan River, in accordance with an agreement between the Israeli government and special emissary of President Eisenhower, Eric Johnston. It seems that the share is closer to 400 than 500 million cubic meters. Regarding the Yarkom River, it is well known that the output decreased considerably in the last few years, and is now 120 million cubic meters per year. Another explanation for the decrease in output is the low precipitation in the past 3 years. If this explanation is correct, it is expected that the Yarkon will regain normal capacity. The second explanation is that the Yarkon springs produce less water, because of the pumping of underground waters from wells in the basin of the stream.<sup>7</sup> This factor will always exist and only by reduction of the pumping will it be possible to overcome it. That is, by decreasing the amount of underground water which is included in the estimated water potential of the country. At present, all these factors cause fears that Israel's water potential is closer to 1.6 billion cubic meters of water per year than 1.74. It is not at all definite that there will be even 1.7 billion cubic meters of water; this would be considered high.

7 Takhnit Shel Mekorot (Makorot Plan) "The Water Resources of Palestine".



### How the Resources are Drying Up

It was estimated that Israel is blessed with 3.5 billion cubic meters of water per year; in reality there is hardly 1.7 billion. Where did the 1.8 billion go? Through three pipelines:

1. From the beginning, there was considerable exaggeration in estimating the underground water. The 1944 estimate of the entire Western Palestine area in this category was 1.5 billion cubic meters of water.<sup>8</sup> Most of the underground water is located in the Coastal plain, therefore it can be assumed that 1.2 billion cubic meters are calculated as reserves in areas which belong today to the state of Israel. The present estimate for this underground water is 500 million cubic meters. Therefore, through the pipeline of exaggerated estimates flows about 700 million cubic meters of water.

2. Estimating the water resources potential was done without taking into account the price of water. If the water price is not calculated, it is also possible today to increase considerably the item "Underground water" and in particular the item "Sewage and return flow" as compared with quantities which appeared in a Tahal estimate in 1958. Very large expenditures will make it possible to use sewage and return flow from the fields after they were used for irrigation, thereby obtaining a large production figure estimated at 145 million cubic meters of water. During 1956, S. Blass put in this category 530 million cubic meters of water. He did this with a calm conscience, because the economic side did not interest him. He said at a symposium on water and land problems, "We must work for the maximum development of water in Israel; this cannot be realized by the chief planners who are influenced by economists ... if the engineers will free themselves from the economists we will have a greater state."<sup>9</sup> But recently there were certain improvements, admitted among others, even by the Tahal officials who lowered the fantastic figure of 530 million cubic meters of water in the section "Sewage and return flow" to 145 million only. Through this line disappeared about 400 million cubic meters.

3. About 700-800 million cubic meters of water are flowing through the political pipeline concerning the Jordan and Yarmuk.

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8 Article by S. Blass in the Entsiklopediyah Ha'ivrit (Hebrew Encyclopedia) vol 10.

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9 Haaretz, 19 June 1955

## Water Problem

In the eyes of the leaders of the Zionist regime it was natural that all the Jordan and Yarmuk water belong to the state of Israel. With a certain degree of optimism, it is possible to estimate the output of the Upper Jordan River at 700 million and the output of the Yarmuk at 500 million cubic meters; together this would be 1.2 billion cubic meters, and that figure appears in estimates of the water for Western Palestine and now for the state of Israel,<sup>10</sup> without leaving even a drop of water for Transjordan or the Kingdom of Jordan. This is cruel, since Jordan and Syria in June 1953 concluded an agreement on the building of the dam in Mikhreiz, half way through the Yarmuk. According to the plan of US engineer M. Bonger, the river water had to be exploited for irrigation of the Jordan Valley and to produce electric power for the two states.<sup>11</sup> Israel protested in Washington and in the UN and demanded a plan for the development of all water resources in the Jordan Valley, claiming that Israel should be compensated for the Yarmuk water, which will be included in the Litani water network in Lebanon. The Israeli protest was met with a Syrian counterprotest against the channel for which Israel began to acquire the area at Geshar Banot Ya'aqov, as part of the national water project which will be instrumental in bringing the Jordan water to the Negev. Also the problem of Jordan water and Yarmuk water was raised at the UN and in the US government.

At the same time (October 1953), the UN dealt with the water exploitation plan for the Jordan Valley, which was already prepared in 1952 for the UN Agency for the aid and employment of Palestine refugees by the Tennessee Valley Authority and worked out by Charles Mein Engineering Company, Boston. According to this plan, which estimates the Jordan and Yarmuk waters at 1.213 billion cubic meters per year, Israel was to receive 394 million cubic meters (32 percent), and the remainder was allotted to Jordan (774 million cubic meters) and to Syria (45 million cubic meters). Among others, Mein deferred the plan for the Mikhreiz Dam and proposed in its place a dam in Adasiyah, Lower section of the Yarmuk. The US government supported the Mein Plan and President Eisenhower designated Eric Johnston, Chairman of the Advisory Council of the Agency for Joint Technical Cooperation (the institution which carries out the Point Four Program of President Truman), to influence the governments involved to accept this plan.

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<sup>10</sup> In a table from the above article by Barukh Ber in Haaretz.

<sup>11</sup> Georgin Stevens, The Jordan River Valley, January 1956, pp 254-258 published in International Conciliation - Carnegie Endowment

The Israeli government submitted a counter proposal known as the Cotton Plan. According to this plan, the waters of the Jordan, Yarmuk, and Litani (a total quantity of 2.346 billion cubic meters) would be distributed among the various states; Israel's part was to be 1.2 billion cubic meters.<sup>12</sup> Johnston definitely refused to discuss Israel's request to be included in the Litani water plan, since the entire Litani River runs through Lebanon and does not present an international problem at all. In regard to the distribution of the Jordan and Yarmuk waters, the US stand was brought to the attention of the Israeli public in a letter by the Haaretz correspondent to the UN M. Medzini: The Americans ... maintain ... that since Israel refused the demand to let the Arab refugees return, Israel is not in a position to refuse a participation in the water-supply plan for the settlements of Arab refugees outside Israeli boundaries.<sup>13</sup>

The problem placed on the agenda was actually the area of the state of Israel. The Mein Plan calls for the reduction of Israel's water potential by 800 million cubic meters; this would mean a reduction of Israel's land potential by 5-6 million dunams [1.1 - 1.32 million acres] or about 40,000 - 50,000 agricultural units. After Mein's negotiations which lasted for more than 2 years, the Israeli government gave in.

#### Water Agreement

Only after two concessions, something was achieved. The first concession is for the good of the state; Israel's share of the distribution of the Jordan and Yarmuk waters was increased from 32 percent (according to the Mein Plan) to about 40 percent. Neither this percentage nor the water quantity it represents was ever brought to the knowledge of the Israeli public.

The 40-percent figure was contained in the above-mentioned US publication.<sup>14</sup> The same publication also listed the water quantities: Israel is to receive 400 million cubic meters, the Arab states 647 million.<sup>15</sup> Therefore Israel's share amounts to 38 percent of the total water quantities, equivalent to 1,047 billion cubic meters. This number is smaller than the figured 1,200 billion cubic meters which was included in the Israeli plan and also in the Mein Plan. The small figure seems to be more than sufficient. The flow of the Jordan at Geshar Banot Ya'aqov is equivalent to 560 million cubic meters and the Yarmuk flow into the Jordan is 450 million cubic meters;<sup>16</sup> together the figure is 1.01 billion cubic meters.

12 From the article "The Water Policy," by H. Halperin, discussing the various plans calling for the distribution of Jordan waters, which appeared in Rive'on Lekalkalah, June 1956, p 411

13 Haaretz, 22 October 1953.

14 p 264 in the Jordan River Valley by Stevens

15 Ibid, p 272

16 Haentsiqlopediyah Ha'ivrit (Hebrew Encyclopedia) vol 6, pp 105-106.

To that must be added many tens of millions of cubic meters which are being lost through absorption and vaporization in Huleh swamps, bringing up the total to about 1.050 billion cubic meters. The figure of 495 million cubic meters, representing Israel's share from the Jordan waters, is included in an estimate of Tahal, apparently overstated by nearly 100 million cubic meters.

The second concession obtained by the state of Israel from the Americans is perhaps also for the benefit of the Zionist regime, but certainly it is bad for the state. The problem in question is the manner in which Israel uses its share of the Jordan water. According to the Mein Plan, it was required to use the Jordan waters and all possible sources nearby, to be able to lower the price of water. The water which was earmarked for Israel will have to get to its destination by gravitation, i.e., it will become especially cheap: "The main irrigation channel for Israel will start at Kafr Baniyas, continue west to Tel al-Qadi and south to the area of Tel Hai; there it will join the channel from Baniyas (? should read Hatsbani), continue its southerly direction, and set the Tel Hai power station into operation. From the confluence, the channel will continue to the 3-kilometer point east of Nazareth and together with the second channel it will irrigate Eastern Galilee, including the reclaimed area of the Huleh, Mishor Sejera Plain and Hittin, Yavniel Valley, the eastern part of the Emeq Yezreel (Jezreel Valley) and 'Emeq Beit Shean (Beisan Valley) ... it will effect an annual electrical output in Tel Hai estimated at 76 million kilowatt hours (which is about 4 percent of the present electrical requirement for Israel - A. R.)."<sup>17</sup> Here Israel is to obtain mainly Hatsbani and Baniyas water, a total of 275 million cubic meters. The remaining water quantities destined for Israel are apparently for the irrigation of the Huleh Region, Jordan Valley, and Beisan Valley, which is carried out even today without pumping cost or at very small cost. The conclusion is that the limited water quantity destined for Israel according to the Mein Plan, and apparently not increased even in the final agreement, indicates at least one advantage - the water will be cheaper; not only will it require almost no power for pumping, but a considerable quantity of energy will be added to the national economy.

On this point the Israeli government gained a complete victory. The agreement entitles Israel to do whatever she wants to with the water. Instead of having to use the water to obtain the greatest economic benefit, Israel is entitled to it; the government decided, therefore to bring the water to the Negev.

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<sup>17</sup> M. Medzini, article in Haaretz, 23 Oct 53.

The Arab League refused to approve the agreement. But although negotiations failed, the US government hinted that it will help the states carry out the part of the water plan to which they agreed, under the conditions that they will not exploit more water than they are entitled to in accordance with the plan and under the condition that the water projects will be carried out in a way which would make it possible to add other projects at a later date. The US government hinted that it is also willing to take care of two thirds of the entire cost, which was estimated at 200 million US dollars.

In the meantime, Jordan started to carry out the Yarmuk Project. The US is sharing expenses, as promised. Israel is equipped to start the national water project; the construction of the water line, which will be the first phase of the project (in 1963), will require 200 million cubic meters of Jordan water for the Negev, and the final phase (1966), 325 million cubic meters. The expenditures for carrying out the first phase are estimated at 140 million Israeli pounds. The government of Israel requested financial assistance from Washington to carry out the project, in accordance with the promise given some time ago, and calling attention to the aid advanced for Jordan. However, so far, the US government has not replied to this request.

In January 1960, the news was published that the Lebanese and UAR governments are planning to divert the Banias and Hatsbani, to prevent Israel from being able to use their water. Later news from New York stated that the UAR has withdrawn from the diversion plan.<sup>18</sup>

From the 600 million cubic meters of the Upper Jordan, 275 million are from the Banias and Hatsbani. The remaining 325 million flow in Israeli territory. Israel's share of the Jordan waters, according to the Johnston Plan, is 400 million cubic meters. The Arabs are supposedly unable to prevent Israel from receiving more than 75 million cubic meters of water, which represents irrigation for 550,000 dunams [121,000 acres] of land or 4,500 agricultural units.

#### Settlements for Defense

A portion of the 400 million cubic meters of water which will go to Israel in accordance with the Johnston Plan is already being exploited in the Huleh Valley, Jordan Valley, and Beisan Valley; if this portion is estimated at 100 million cubic meters, another 300 million will remain. About 1.3 billion are now being exploited and together with the above 300 million, the total of water exploited by Israel will be 1.6 billion cubic meters, which represents Israel's total water potential. Three hundred million cubic meters of the Jordan, therefore, are the last water reserves of Israel. Is the Negev worth using these reserves?

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<sup>18</sup> Ma'ariv, 10 January 1960

"Definitely," said the defense lobby. The defense motive is simple and apparently convincing: 300 million cubic meters of water for the Northern Negev, part of which - perhaps 50 million cubic meters - is needed to fill the water quotas for the existing settlements, and the remaining 250 million cubic meters for new settlements (about 1.9 million dunams cultivated land - or 16,000 agricultural units, i.e., 80 settlements of 200 units each). These settlements are vital for the defense of the Negev.

The defense motive is really an ordinary one, but not a convincing one. Under modern war conditions, when armies must be very mobile, it is difficult to understand what advantage a densely populated settlement would have in the defense of the area. During the war the state required the army to be capable of reaching a certain spot as quickly as possible and not where there was a densely populated settlement at that spot. However, when there is no actual war, it is sufficient for the strong points to hold the area and vital installations located there. It is also very clear that it would damage the economy of the state and in turn also the country's security if the irrigation water were directed to a locality which is economically inefficient. It would also cause an increase in the production costs of agriculture and would thus effect the entire national economy.

#### "Economic" Reasons Given For the Negev Project

Members of the Zionist regime are also giving economic reasons in favor of diverting the Jordan water to the Negev; irrigation of the Negev would increase the land potential of the state more than the irrigation in the North. According to the schematic calculation which was made at the beginning of this article, it is possible with the help of 300 million cubic meters of irrigation water to establish 15,000 agricultural units in the North and more than 18,000 units in the Negev. For that reason it is not at all important in contrast to offset the cost of agricultural production. It is better to establish 15,000 agricultural units in the North, which can gain respect and contribute to the reduction of price standards in the national economy, than 18,000 units in the Negev which will require high cost of production.

The Negev planners have an additional motive - economic necessity, social necessity: in the northern and central regions, there are no areas available for artificial irrigation, since all land had already been distributed among private owners and kibbutzim settlements and they are not willing to convert their land into irrigation fields. On the other hand, one should not forget that the northern and central regions have more than 3 million dunams of agricultural land suitable for irrigation, and that the entire area available for irrigation by 300 million cubic meters of Jordan water amounts to 450,000 dunams.

Now let us turn to the vital problem - the price of water.

## Price of Water

The price of water for irrigation is very high, complain the farmers; it represents a national average of about 15 percent of the cost of agricultural production, and in certain areas this precludes any possibility for profitable production. With these words, a member of the management board of the Mekorot Water Company Ltd., started his article,<sup>19</sup> in which he proved that the water price paid to his company does not cover the production cost of the water, because the budget expenditures of the company do not bring this into account to a sufficient degree -- cost of capital, interests, and amortization. "The actual figure of the cost of the water supply for the 1958/1959 [fiscal year] totaled 26 million Israeli pounds; however, the budget called for expenditures totaling 17.3 million pounds.<sup>20</sup> From now on, the expenditures of the Mekorot budget must be increased by about 50 percent, and at the same time the price of water must be raised. Let us assume that the production cost of agriculture is 100, and 15 represents the water price, and a 50 percent increase of the water price would increase the expenditure section to 22.5 and raise the cost of agricultural production to 107.5, i.e., 7.5 percent, and the share for the water price would be 21 percent. The present "low" price for water, declared Mr. Qriv [Tahal official] explains the necessity for unknown subsidies for agriculture and known subsidies paid in areas where the water supply was difficult.<sup>21</sup> Without the known subsidies, the proportion for water was even higher, maybe 23 percent.

The general assumption is that the share of the cost of water of the total cost of agricultural production should be around 10 percent," stated a senior official of the Ministry of Agriculture.<sup>22</sup> The fact that the value of the water reaches a national average of 23 percent of the value of the agricultural production, although the farmers pay the actual price of water, does not seem to bother this official, who is one of the proponents for irrigation of the Negev.<sup>23</sup>

According to the above official and his associates, the problem is solved by subsidies, promises for agricultural compensation for the high price of water. Regarding the national economy, there is no solution. The state of Israel will not be able to exist if the very large portion of the national requirement is not covered by imports; but import has to be paid for in the long run, through exports.

19 Z. Qriv, "Price of Water", Riv'on Lekalkalah, Aug 58, p 449

20 ibid, page 452

21 Z. Qriv, "Price of Water", Riv'on Lekalkalah, Aug 58, p 449

22 Amir, "Price of Water and Agricultural Economy," Riv'on Lekalkalah, Oct 54, p 156

23 Amir, "Soil and Water," Riv'on Lekalkalah, June 1956, p 119

A suitable slogan could be: "Export or Death." In the matter of exports, Israel would have to compete on the world market in quality and price of products. The cost of agricultural production, which determines its price level, is the most important factor in the price level which makes it possible to sell the agricultural and industrial products in the world market. If the prices for the agricultural products are reduced artificially by subsidies, the Israeli citizen will benefit as a consumer, but he will lose in the tax payments, since the subsidies must be paid from the state budget. The price index in the country will remain high, and the cost of production and export prices will also be high.

#### Water Prices For the Negev

None of the prices paid by the Negev farmers are low. There is no purpose in putting them high, because they do not reflect the cost of the water production, as we learned from Qriv's article. We are interested in knowing not what the production costs are, but what the costs are for bringing the Jordan water to the Negev. The present darkness, which the government puts on all water affairs, allows publishing of the roughest estimates only, but at least they give an idea of the amounts of these costs.

Investments of the national water project, phase 1, are estimated at about 140 million Israeli pounds, wrote Yair Kutler in Haaretz of 21 February 1958; and water supplies planned for this phase are 200 million cubic meters per year. This requires an investment of 700 pounds for each 1,000 cubic meters of water per year. According to the testimony of Mr. Qriv, "a project is considered expensive by the Mekorot Company if the initial investment for a quantity of 1,000 cubic meters of water exceeds 250 pounds and if the average water price of the same project exceeds 4.5 Agurot per cubic meters of water.<sup>24</sup> The initial investment for the diversion of the Jordan water to the Negev, therefore, costs three times the figure calculated by the Mekorot Company and is an expensive project.

Interest at a rate of about 6 percent must be paid for this investment. The amortization is estimated at about 2 percent only (as compared to the calculation of 4 to 5 percent, requested by Mr. Qriv), and the principal investment is slated for the conduit and pipeline, with an estimated amortization for 50 years. Capital expenditures amount to 8 percent, i.e., the price of 56 Israeli pounds for 1,000 cubic meters of water or 5.6 Agurot [an Israeli pound has 100 Agurot] per cubic meter. The maintenance expenditures are only 3 Agurot and the production expenditures 8.6 Agurot per one cubic meter of water, as compared to 4.5 Agurot, which Mr. Qriv calculated as the maximum price for water in the water project.

<sup>24</sup> Z. Qriv, Riv'on Lekalkalah, Aug 58, p 451



In view of these figures, let us look at the opinion of an agricultural economic expert: "The following question must be asked: Is it worthwhile, from the economic point of view, to bring the water to the Negev, in order to increase the cultivated areas to the maximum possible, or is it more profitable to forego an increase of the cultivated area and use the same water to irrigate areas in the North of the country, which are located closer to the water resources and would therefore make the cost lower? The answer to this question has already been given in statements and actions by the statesmen who maintain that it is forbidden for security reasons, to leave the southern region of the country unpopulated... This decision is unfounded in regard to economic factors. If the matter is considered from the economic point of view, the question is: which is more beneficial -- the additional area in the southern part of the country for which the irrigation expenditures are very high or the conversion of dryland areas in the northern part of the country into irrigation areas with relatively low irrigation expenses?"<sup>25</sup>

#### The Decision is Still in Our Hands

At least 3 years will pass before the first phase of the national water project is completed. Part of the project has already been completed, and it is progressing from day to day. Despite all that, the public can still prevent the government from taking this foolish step by which the agricultural population will suffer directly and in turn also the entire state. The agricultural population recently started to show its feeling against the high production cost in agriculture. Nothing will prevent it from forcing the government to reappraise the irrigation project for the Negev, despite the opposition of the defense lobby.

If public opinion urges the government to forego the Jordan water diversion project for the Negev, and instead exploit the waters in the northern part of the country, this will make it possible to reduce the water price in the country. This goal will be achieved, if the request for reopening of the original Mein Plan succeeds. This is also contrary to most irrigation projects in the country which require power. The irrigation of Eastern Galilee and the Eastern Valley, according to the Mein Plan, will produce power and then will be able to supply water at lower prices.

The materializing of the Mein Plan has the approval of the UAR and Lebanon.

If the government of Israel turns to the UN with a statement that it is willing to see only an economic asset in the Jordan waters and to exclude from the discussion any political and "security" motives, there will be nothing in the way of creating a foundation to reopen the discussion of the regional plan, along purely economic and technical lines. Nothing will be in the way if all sides will agree to forego the security atmosphere.

<sup>25</sup> Y. Lewah "Economy of Agriculture," Riv'on Lekalkalah, Aug 58, p 134

A new diplomatic initiative of the government of Israel will first be required and a strong determination to use the Jordan waters for irrigation in the north. This is a necessity whether the reopening of the Mein Plan succeeds or not. There are powerful forces in Israel which received their authority from the agricultural population, and it is up to them to decide if they are willing to fight for these vital interests, which are identified in this case with the interests of the state without taking into account the prestige or complexity of the Zionist apparatus.

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